

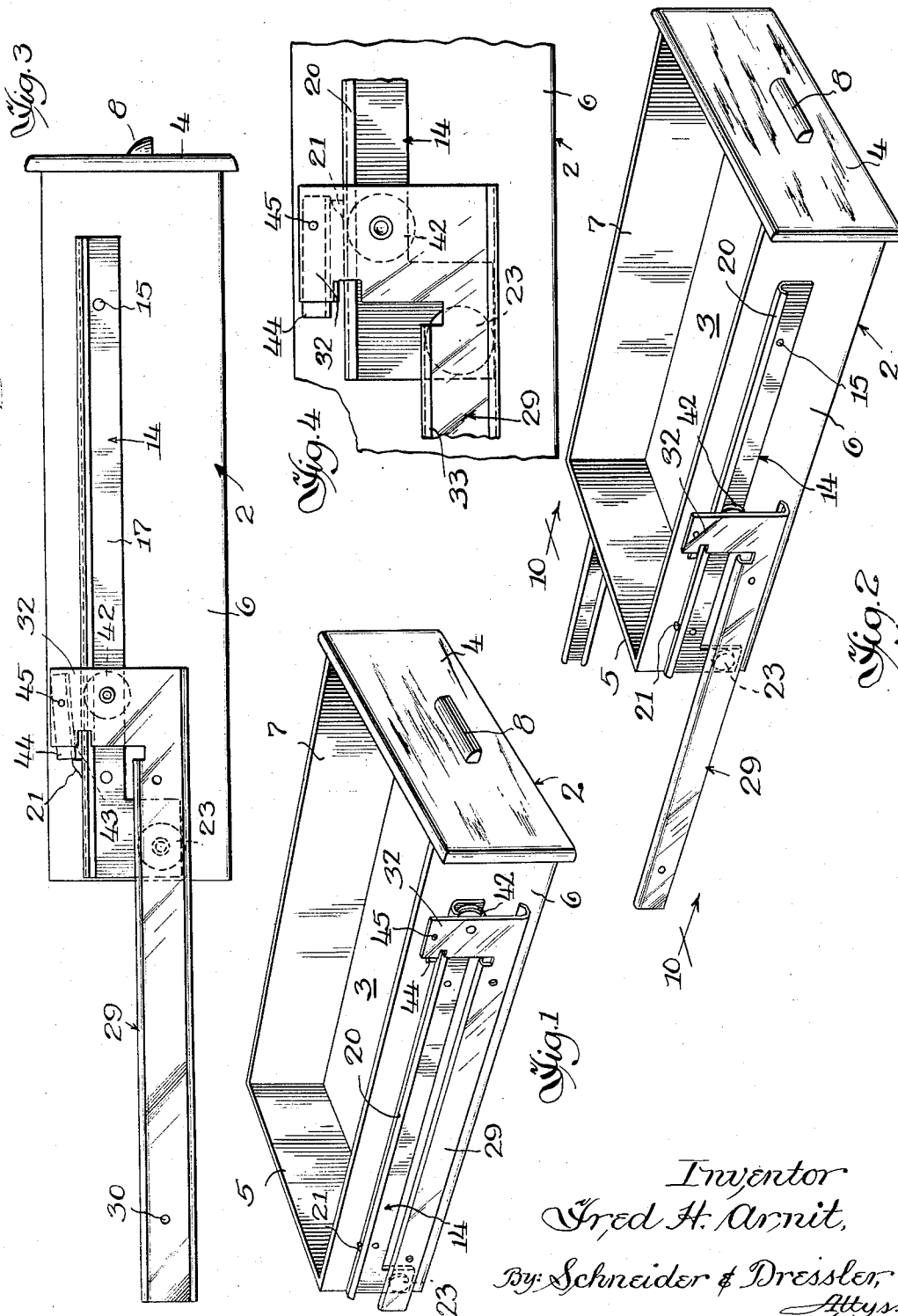
Aug. 4, 1959

F. H. ARNIT
DRAWER SLIDE

2,898,159

Filed Feb. 16, 1955

3 Sheets-Sheet 1



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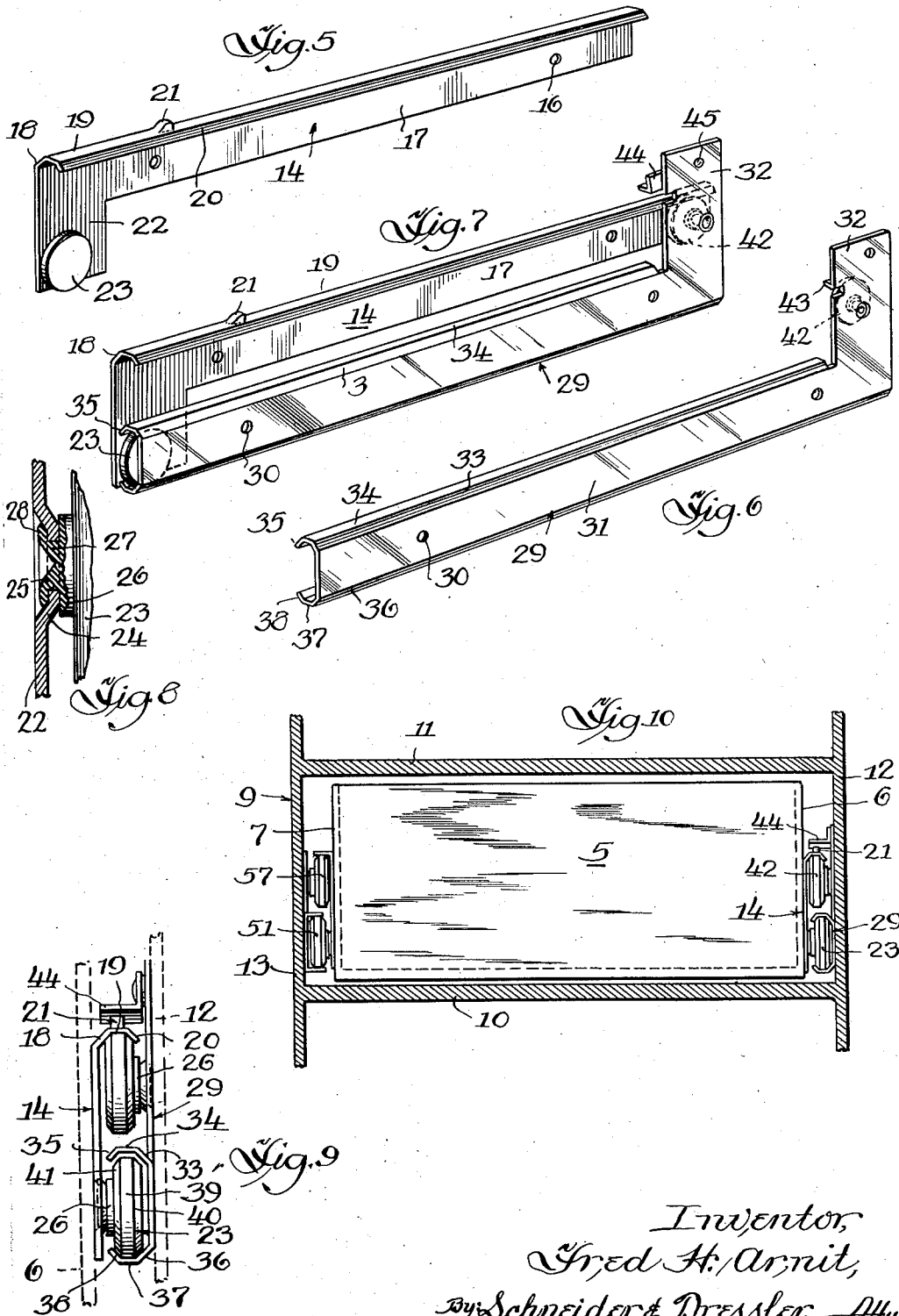
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3 Sheets-Sheet 3

Fig. 11

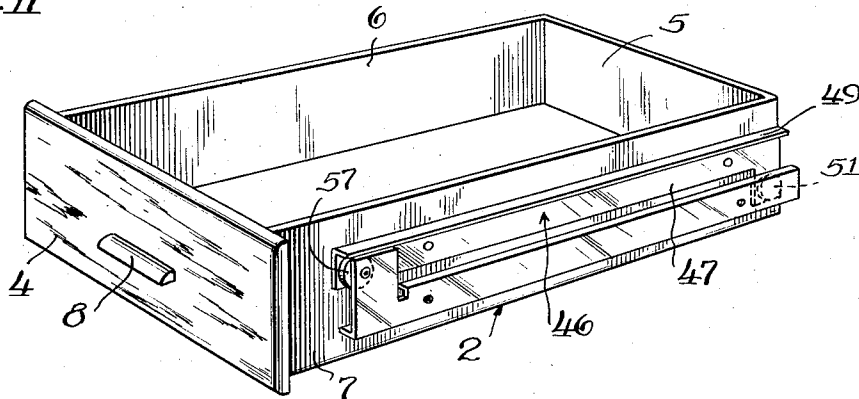


Fig. 12

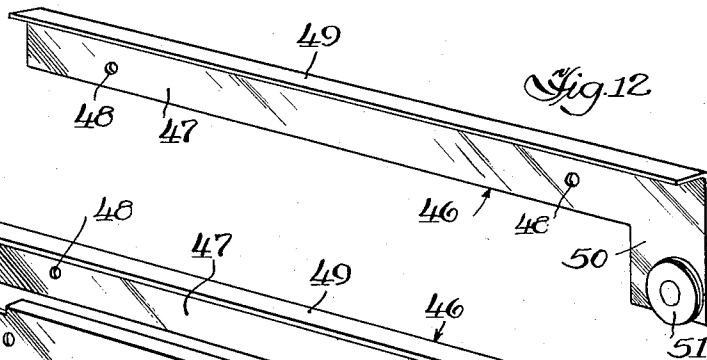


Fig. 14

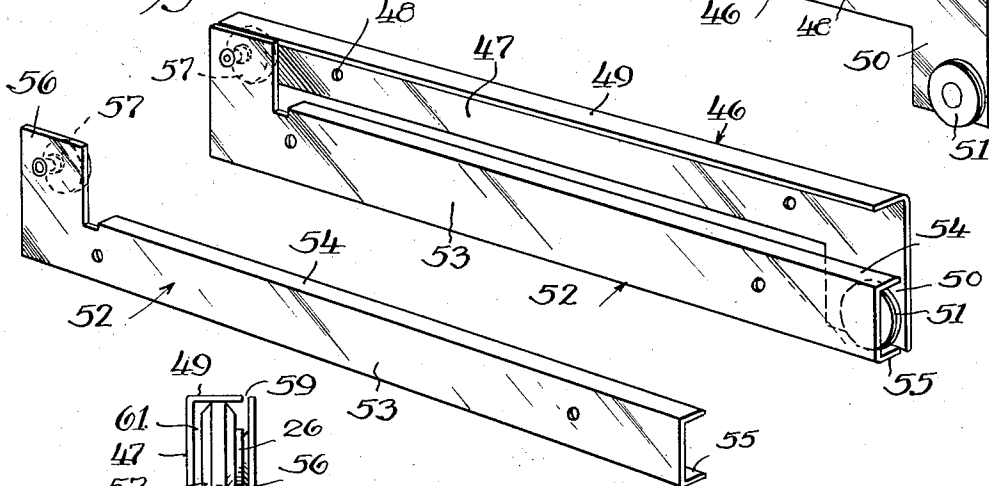


Fig. 13

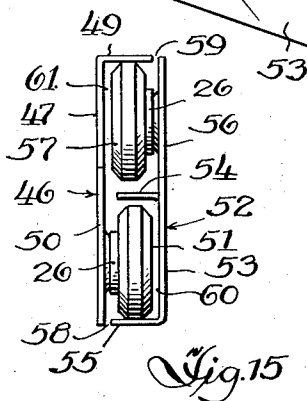


Fig. 15

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2,898,159

DRAWER SLIDE

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7 Claims. (Cl. 308—3.8)

This invention relates to a drawer slide, and is particularly concerned with means for preventing a drawer slidably mounted in a cabinet from binding due to slight irregularities in construction of either the drawer or cabinet in which it is mounted.

The drawer is provided with a longitudinal channel fixed to each side, and the cabinet is provided with a mating channel on each side. A roller fixed to each of the drawer channels is adapted to roll in the mating channel of the cabinet, and each channel of the cabinet has fixed to it a roller adapted to roll in the channel of the adjacent side of the drawer. In accordance with my invention, means is provided on one side of the drawer to permit a slight lateral movement between the mating channels to prevent binding of the drawer if any slight irregularity exists in either the drawer or the cabinet that would otherwise cause the drawer to bind when it is slid back and forth in the cabinet.

At the opposite side of the drawer each roller is engaged on both sides of the plane of its maximum diameter by the edge of the channel against which it rolls to prevent any side sway as the drawer is slid back and forth in the cabinet. The edges of the channels engaging the rollers on this second side of the drawer each have an angular configuration in transverse cross section comprising a flat section which engages the peripheral surface of the roller in its plane of maximum diameter and two angular surfaces inclined outwardly from the outer edges of said flat surface to contact both sides of the roller along planes of lesser diameter.

The rollers are preferably made of nylon or other suitable plastic material to reduce the noise as much as possible, but may be made of steel. The outer surface of each roller may be rounded transversely, but preferably is shaped to conform to the transverse configuration of the edge of the channel in which it is adapted to roll.

The structure by which the above and other advantages of the invention are attained will be described in the following specification, taken in conjunction with the accompanying drawings, showing a preferred illustrative embodiment of the invention, in which:

Figure 1 is a perspective view of the drawer showing the channel structure on one side, a cabinet being omitted to facilitate illustration of the channel structure;

Fig. 2 is a perspective view, similar to Fig. 1, showing the drawer pulled forwardly relative to the channels of the cabinet;

Fig. 3 is a side elevational view, showing the drawer in its fully extended position;

Fig. 4 is an enlarged fragmentary side elevational view, showing the channel and roller structure at one side of the drawer as the drawer is being pulled entirely out of the cabinet;

Fig. 5 is a detail perspective view of the channel which is normally fixed to one side of the drawer;

Fig. 6 is a detail perspective view of the mating channel which is normally fixed to the side of the cabinet adjacent the channel shown in Fig. 5;

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Fig. 7 is a detail perspective view showing the channels of Figs. 5 and 6 in their operative relationship;

Fig. 8 is a fragmentary detail view, partly in section and partly in elevation, showing the manner in which each roller is secured to a channel member;

Fig. 9 is a fragmentary rear end view of the mating channels at one side of the drawer, the walls of the drawer and cabinet being indicated in dotted lines;

Fig. 10 is a cross sectional view through the cabinet, taken along the line 10—10 of Fig. 2, and showing the rear end of the drawer and the channel at both sides of the drawer in elevation;

Fig. 11 is a view, similar to Fig. 1, showing the channel structure at the opposite side of the drawer;

Fig. 12 is a view, similar to Fig. 5, showing the channel normally fixed to the second side of the drawer;

Fig. 13 is a view, similar to Fig. 6, showing the channel normally fixed to the side of the cabinet adjacent the channel shown in Fig. 12;

Fig. 14 is a view, similar to Fig. 7, showing the channels of Figs. 12 and 13 in operative relationship; and

Fig. 15 is a fragmentary front end view of the mating channels at the second side of the drawer, the cabinet and drawer structure being omitted.

In the drawings, the reference numeral 2 indicates a drawer comprising a bottom wall 3, front wall 4, back wall 5, and side walls 6 and 7. Front wall 4 is provided with a conventional drawer pull 8. The drawer is adapted to be slidably mounted in one compartment of a cabinet 9. The cabinet may consist of a single compartment, but ordinarily comprises a plurality of compartments in vertical relationship. The cabinet comprises a bottom wall 10, a top wall 11, a side wall 12 adjacent side wall 6 of the drawer, another side wall 13 adjacent side wall 7, and a back wall which is not shown. The front of the cabinet is open, being closed by front wall 4 of the drawer when the drawer is in its rearmost position.

An upper channel 14, movable relative to the channel fixed to the cabinet, is rigidly secured to side wall 6 of the drawer by means of screws 15 passing through apertures 16. Channel 14 comprises a flat strip 17 having its top edge bent transversely to provide an angular section 18, a flat section 19 perpendicular to strip 17, and an angular section 20. Sections 18 and 20 each extend outwardly from the outer edges of flat section 19. Section 19 is provided with an embossment 21 which serves as a stop member, as hereinafter described. Although it is preferred to strike embossment 21 out of the material of channel 14, the stop member may be formed by welding a separate lug to the upper edge of the channel.

The rear portion of strip 17 is extended downwardly, as indicated at 22, and a roller 23 is rotatably secured thereto. A preferred method of securing the roller to the channel is shown in Fig. 8. Section 22 of the channel is embossed, as indicated at 24, and the embossed portion is provided with a central aperture 25. Roller 23 is provided with an integral hub 26 having an end 27 of reduced diameter extending through aperture 25. The outer portion of end 27 is hollowed out and peened or spun over the edges of the channel contiguous to aperture 25, as indicated at 28. Although roller 23 is free to rotate, it is firmly held by the interengagement of hub 26 and lip 28 with opposite surfaces of the channel. It will be understood that each of the rollers is secured to one of the channels in the same manner.

A lower stationary channel 29 is provided with a plurality of apertures 30 and is rigidly secured to side wall 12 of cabinet 9 by screws extending through the apertures. Channel 29 comprises a flat strip 31 which is aligned horizontally with roller 23. The forward portion of strip 31 extends upwardly above the flat sec-

tion 19 of upper channel 14, as indicated at 32. The upper edge of strip 31 is bent transversely to form an angular section 33, a flat section 34, and an angular section 35 corresponding respectively to sections 18, 19 and 20 of channel 14. The lower edge of strip 31 is bent transversely to form oppositely disposed corresponding sections 36, 37 and 38. The opposite edges of channel 29 embrace roller 23, but are spaced apart a distance slightly greater than the maximum diameter of the roller to permit some vertical play between the roller and the edges of the channel for a reason hereinafter disclosed.

Roller 23 is preferably made of nylon, or some other suitable plastic material, and is provided with a flat surface 39 in the plane of its maximum diameter and with two angular surfaces 40 and 41 on opposite sides of the flat surface. The angularity of these surfaces conforms to the angularity of edge sections 37, 36 and 38, respectively, so that the roller 23 is engaged on both sides of its plane of maximum diameter by edge sections 36 and 38 to hold roller 23 straight as drawer 2 is slid back and forth in cabinet 9.

A roller 42 is rotatably mounted on section 32 of stationary channel 29 in position to engage the edge sections 18, 19 and 20 of channel 14. Roller 42 is similar to roller 23 and its peripheral surface engages each of the angular sections 18 and 20 as well as the flat section 19 of the upper edge of strip 17. The rear edge of section 32 has a lip 43 struck therefrom and bent to project at right angles to strip 31 just above the upper edge of channel 14. An angle bar 44 pivoted to section 32 at 45 rests on lip 43 with its rear end normally in the path of stop member 21. When drawer 2 is pulled forwardly, stop member 21 engages the rear end of angle bar 44 to limit its forward movement. If the drawer is to be removed from the cabinet, finger pressure applied downwardly against the front end of angle bar 44 lifts the rear end of the bar and permits stop member 21 to pass under it.

As drawer 2 is pulled forwardly from its rearmost position, roller 23 rolls in contact with the lower edge of stationary channel 29 and the upper edge of channel 14 engages roller 42. As the drawer passes the mid-point of its normal travel the portion of the drawer forward of roller 42 becomes heavier than the portion to the rear of said roller and tends to tilt downwardly. The slight vertical play between roller 23 and the edges of channel 29 permits the drawer to tilt slightly. Roller 23 then engages the upper edge of channel 29, thereby preventing excessive vertical movement and enabling the drawer to be slid forwardly without difficulty. The inter-engagement of the angular surfaces of rollers 23 and 42 with the corresponding surfaces of the upper edge of channel 14 and the upper or lower edge of channel 29, respectively, prevents any lateral movement between the rollers and the channels positioned between side wall 6 of the drawer and side wall 12 of the cabinet.

An upper channel 46, movable relative to the channel fixed to the cabinet, is secured to the side wall 7 of drawer 2. Channel 46 comprises a flat strip 47 provided with apertures 48 and having its upper edge bent transversely to form a horizontal flange 49. The rear end of channel 46 is extended downwardly to provide an extension 50 upon which a roller 51 is rotatably mounted. A lower stationary channel 52 is secured to wall 13 of cabinet 9. Channel 52 comprises a flat strip 53 having its edges bent transversely to form horizontal flanges 54 and 55 which are spaced apart a distance slightly greater than the maximum diameter of roller 51. The vertical distance between flanges 54 and 55 is the same as the distance between sections 19 and 34 of channel 29. Strip 53 is provided at its forward end with an upwardly extending section 56 upon which a roller 57 is rotatably mounted. Rollers 51 and 57 are similar to rollers 23 and 42, and the action at the side of the drawer is similar

to that previously described, except for one essential difference.

As shown in Fig. 15, a clearance space 58 is provided between the outer edge of flange 55 and extension 50, and a similar clearance space 59 is provided between the outer edge of flange 49 and extension 56. A clearance space 60 is provided between the vertical planes of the outer side of roller 51 and strip 53. A similar clearance space 61 is provided between the vertical planes of the outer side of roller 57 and strip 47. Any slight irregularity in the construction of drawer 2 or cabinet 9 will tend to cause a slight lateral movement between channels 46 and 52. The lateral rigidity with which rollers 23 and 42 are held prevents any lateral movement between side 6 of the drawer and the adjacent side of cabinet 9, and accordingly all lateral thrusts are transmitted to the opposite side. The clearance spaces 58, 59, 60 and 61 permit a slight lateral movement between side 7 of the drawer and the adjacent side of cabinet 9, thus preventing the drawer from binding if either the drawer or cabinet does have any slight irregularity in its construction. The flanges 49, 54 and 55 do not engage the angular surfaces of either roller 51 or 57, and the flat surface of either of these two rollers is adapted to roll against any portion of the flat surface of the flanges.

If any irregularity of construction in either the drawer or cabinet causes the drawer to sway slightly in either lateral direction, the channels and rollers between side 6 and the cabinet are held against lateral movement, but roller 51 will move laterally relative to strip 47 to compensate for such irregularities and allow the drawer to open freely without binding on either side of the drawer.

It will be obvious that although channels 14 and 29 are shown on the left hand side of drawer 2, they may be on either side, and channels 46 and 52 will be on the opposite side.

While I have described a preferred embodiment of my invention in detail, it will be understood that the description thereof is illustrative, rather than restrictive, as many details may be modified or changed without departing from the spirit or scope of my invention. Accordingly, I do not desire to be restricted to the exact construction described.

I claim:

1. In a drawer slide, a stationary channel, a roller rotatably mounted on said stationary channel, a movable channel, and a roller rotatably mounted on said movable channel, said stationary channel having its upper and lower edges bent transversely to provide a rolling contact with the peripheral surface of said second roller across the area of maximum diameter of said second roller and also across adjacent areas of less diameter, said movable channel having an upper edge bent transversely to provide a rolling contact with the peripheral surface of said first roller across its area of maximum diameter and also across adjacent areas of less diameter.

2. In a drawer slide, a pair of stationary channels adapted to be secured to opposite sides of an opening in a cabinet in which a drawer is to be slidably mounted, a roller rotatably mounted on each of said stationary channels, a pair of movable channels adapted to be mounted on opposite sides of a drawer to be mounted in said cabinet, a roller rotatably mounted on each of said movable channels, each of said rollers having a flat surface across the area of maximum diameter and an angular surface adjacent opposite edges of said flat surface, one of said stationary channels having an upper and lower edge each bent transversely at right angles to provide a rolling contact with said flat surface of the roller mounted on the adjacent movable channel, and said other stationary channel having an upper and lower edge each bent transversely to provide a rolling contact with said flat surface and both angular surfaces of the roller mounted on said adjacent movable channel.

3. In a drawer slide, a pair of stationary channels

adapted to be secured to opposite sides of an opening in a cabinet in which a drawer is to be slidably mounted, a pair of movable channels adapted to be secured to opposite sides of a drawer to be mounted in said cabinet, a roller rotatably mounted on each of said channels, each of said rollers having a flat surface across the area of maximum diameter and an angular surface adjacent each opposite edge of said flat surface, one of said stationary channels having an upper and lower edge each bent transversely at right angles to provide a rolling contact with said flat surface of the roller mounted on the adjacent movable channel, said other stationary channel having an upper and lower edge bent transversely to provide a rolling contact with said flat surface and both adjacent angular surfaces of the roller mounted on the adjacent movable channel, said movable channel adjacent said first mentioned stationary channel having an upper edge bent transversely at right angles to provide rolling contact with said flat surface of the roller mounted on said first mentioned stationary channel, and said other movable channel having an upper edge bent transversely to provide rolling contact with said flat surface and both adjacent angular surfaces of the roller mounted on the adjacent stationary channel.

4. A drawer mounted to slide in an opening is a cabinet having a stationary channel secured to each side, said drawer having two side walls each provided with a channel positioned adjacent and mating with one of said stationary channels, a roller rotatably mounted on each of said channels, each of said channels having an edge bent transversely to provide rolling contact with the peripheral surface of the roller mounted on the adjacent channel, two of said mating channels having edges bent to provide rolling contact with the rollers of each other over a portion of the peripheral surface spaced from the area of a maximum diameter.

5. In a drawer slide, a pair of stationary channels adapted to be secured to opposite sides of an opening in a cabinet, a roller rotatably mounted on each of said stationary channels, a pair of movable channels adapted to be mounted on opposite sides of a drawer to be mounted in said opening, a roller rotatably mounted on each of said movable channels, each of said stationary channels being engageable in rolling contact with the roller of said adjacent movable channel, each of said movable channels being engageable in rolling contact with the roller of said adjacent stationary channel, one of said stationary channels and the adjacent movable channel each having an edge extending transversely around a portion of the roller of the other to prevent lateral movement of either of said last mentioned channels relative to the roller with which it is engageable, and said other channels having horizontal flanges engageable in rolling contact with the roller mounted on the other, the outer edge of each of said horizontal flanges being spaced laterally from the channel on which is mounted the roller with which it is engaged to provide clearance between said last mentioned channels, said last mentioned channels each being capable

of limited lateral movement relative to the roller with which it is engageable.

6. In a drawer slide, a pair of stationary channels adapted to be secured to opposite sides of an opening in a cabinet, a pair of movable channels adapted to be mounted on opposite sides of a drawer to be mounted in said opening, each of said movable channels being adjacent one of said stationary channels, a roller rotatably mounted on each of said channels, one stationary channel being engageable in rolling contact with the roller of said adjacent movable channel, said last mentioned movable channel being engageable in rolling contact with the roller of said adjacent stationary channel, said one stationary channel and adjacent movable channel each being shaped to engage vertical edge portions of the roller with which it is engageable and thereby prevent relative lateral movement of said last mentioned channels when engaged with said rollers, said other stationary channel and said other movable channel having horizontal flanges engageable with the roller mounted on the other, the outer edge of each of said horizontal flanges being spaced laterally from the channel on which is mounted the roller with which it is engaged to provide clearance between said last mentioned channels, said last mentioned channels being capable of limited relative lateral movement when engaged with said last mentioned rollers.

7. In a drawer slide, a pair of stationary channels and a pair of movable channels, one channel of each of said pairs of channels being adjacent one channel of said other pair of channels, rollers rotatably mounted on each of said channels, each of said channels being engageable with the roller of the adjacent channel, two of said adjacent channels having horizontal flanges engageable in rolling contact with the roller mounted on the other, the outer edge of each of said horizontal flanges being spaced laterally from the other of said two channels to provide clearance between said two channels, each of said two channels being capable of limited lateral movement relative to the rollers with which they are engageable, and a flange on one of said other two channels, said flange being engageable in rolling contact with the roller of the adjacent channel and being bent transversely to engage the side of said last mentioned roller to prevent lateral movement of said channel provided with said transversely bent flange when it is engaged with the roller of the adjacent channel.

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